Phase 1: Parallel Implementation and Performance Analysis of the Sieve of Eratosthenes

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Project description:

A prime number is a natural number that has exactly two distinct natural number divisors: 1 and itself. Prime calculation plays an important role on secure encryption. The data encryption/decryption by public keys such as the RSA algorithm makes use of prime numbers. The sieve of Eratosthenes is a simple ancient algorithm for finding all prime numbers up to any given limit.

Serial algorithm:

1. Create list of unmarked natural numbers 2, 3, …, n

2. k ← 2

3. Repeat

(a) Mark all multiples of k between k^2 and n

(b) k ← smallest unmarked number > k

4. The unmarked numbers are primes.

Source code:

Source code of chosen option.

Screenshots:

Screenshots.

Results:

Discussion: